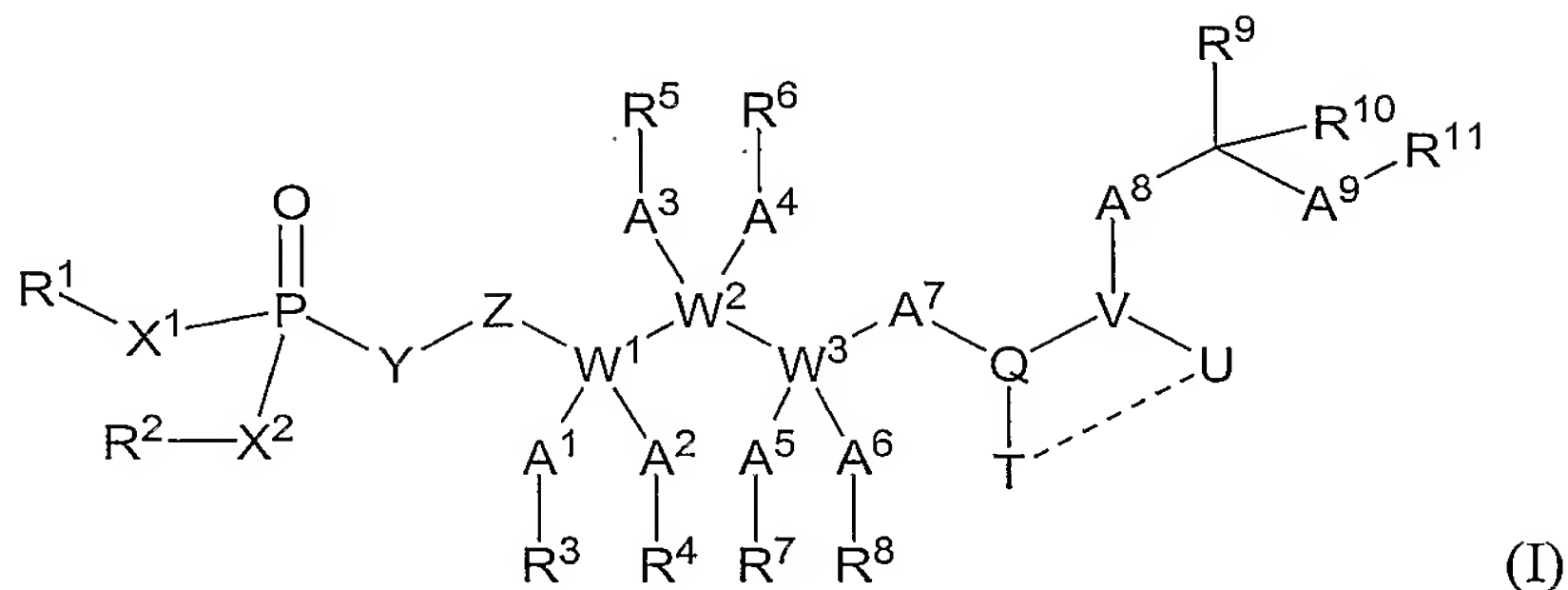


Claims

1. A compound having formula (I)



wherein the dashed line indicates a single or double bond, or is absent;

wherein  $R^1$  and  $R^2$  are each and independently selected from the group comprising -H and phospho protecting groups;

wherein  $X^1$  and  $X^2$  are each and independently selected from the group comprising -O-, -S-, -NR<sup>12</sup>-;

wherein Z is selected from the group comprising -O-, -S-, -NR<sup>13</sup>-, -(CR<sup>14</sup>R<sup>15</sup>)-;

wherein  $A^1$ ,  $A^2$ ,  $A^3$ ,  $A^4$ ,  $A^5$ ,  $A^6$ ,  $A^7$ ,  $A^8$  and  $A^9$  are each and independently selected from the group comprising -O-, -S-, -NR<sup>16</sup>-, -S(O)-, -S(O<sub>2</sub>)-, -C(O)-, -C(S)-, -NR<sup>17</sup>-C(O)-, -NR<sup>18</sup>-C(S)-, -NR<sup>19</sup>-C(O)-NR<sup>20</sup>-, -NR<sup>21</sup>-C(S)-NR<sup>22</sup>-, -NR<sup>23</sup>-S(O)-, -NR<sup>24</sup>-S(O<sub>2</sub>)-, and -NR<sup>25</sup>-C(O)-O-, or are each and independently from each other absent;

wherein Y is selected from the group comprising -O-, -CR<sup>26</sup>R<sup>27</sup>-;

wherein Q and V are each and independently selected from the group comprising  $\begin{array}{c} \diagup \\ \text{---C}^{\text{28}} \end{array}$  and  $\begin{array}{c} | \\ \text{---N---} \end{array}$ ;

wherein  $W^1$ ,  $W^2$  and  $W^3$  are each and independently selected from the group comprising  $\begin{array}{c} \diagup \\ \text{---C---} \end{array}$  and  $\begin{array}{c} | \\ \text{---N---} \end{array}$ ;

wherein  $R^3, R^4, R^5, R^6, R^7, R^8, R^9, R^{10}, R^{11}, R^{12}, R^{13}, R^{14}, R^{15}, R^{16}, R^{17}, R^{18}, R^{19}, R^{20}, R^{21}, R^{22}, R^{23}, R^{24}, R^{25}, R^{26}, R^{27}, R^{28}, T$  and  $U$  are each and independently selected from the group comprising -H, halo, alkyl, substituted alkyl, straight alkyl, substituted straight alkyl, branched alkyl, substituted branched alkyl, alkenyl, straight alkenyl, substituted straight alkenyl, branched alkenyl, substituted branched alkenyl, alkynyl, straight alkynyl, substituted straight alkynyl, branched alkynyl, substituted branched alkynyl, cycloalkyl, substituted cycloalkyl, cycloalkenyl, substituted cycloalkenyl, heterocyclyl, substituted heterocyclyl, mono-unsaturated heterocyclyl, substituted mono-unsaturated heterocyclyl, poly-unsaturated heterocyclyl, substituted poly-unsaturated heterocyclyl, aryl, substituted aryl, heteroaryl, substituted heteroaryl, arylalkyl, substituted arylalkyl, heteroarylalkyl, substituted heteroarylalkyl, heterocyclylalkyl, substituted heterocyclylalkyl, or are each and independently from each other absent;

and the salts, hydrates, solvates and prodrugs thereof.

2. The compound according to claim 1, wherein  $W^1, A^1, A^2, A^3, A^4, A^5, R^3$ , and  $R^4$  are absent; wherein  $R^5, R^6$  and  $R^7$  are -H; wherein  $W^2$  and  $W^3$  is  $\begin{array}{c} \diagup \\ \text{---C---} \\ \diagdown \end{array}$ ; wherein preferably  $Z$  is either -S- or -O-, more preferably -S-; and wherein preferably  $Y$  is -CH<sub>2</sub>-; wherein preferably  $A^7$  is either -C(O)- or -CH<sub>2</sub>-; wherein both  $X^1$  and  $X^2$  are -O-; wherein  $A^8$  is -C(O)-O- or -NR<sup>29</sup>-C(O)-, whereby the C-atom of the -NR<sup>29</sup>-C(O)- and -C(O)-O- is covalently bound to  $V$ ; and wherein  $R^{29}$  is -H or lower alkyl.

3. The compound according to claim 1, wherein  $W^1, W^2, A^1, A^2, A^3, A^4, A^5, R^3, R^4, R^5$ , and  $R^6$  are absent; wherein  $R^7$  is -H; wherein  $W^3$  is  $\begin{array}{c} \diagup \\ \text{---C---} \\ \diagdown \end{array}$ ; wherein preferably  $Z$  is either -S- or -O-, more preferably -S-; and wherein preferably  $Y$  is -CH<sub>2</sub>-; wherein preferably  $A^7$  is either -C(O)- or -CH<sub>2</sub>-; wherein both  $X^1$  and  $X^2$  are -O-; wherein  $A^8$  is -C(O)-O- or -NR<sup>29</sup>-C(O)-, whereby the C-atom of the -NR<sup>29</sup>-C(O)- and -C(O)-O- is covalently bound to  $V$ ; and wherein  $R^{29}$  is -H or lower alkyl.

4. The compound according to any of the claims 1 to 3, preferably claims 2 to 3, more preferably claim 3, wherein  $R^8$  is -H and wherein preferably  $A^6$  is absent.

5. The compound according to any of the claims 1 to 3, preferably claims 2 to 3, wherein  $A^6$  is selected from the group comprising  $-NR^{17}-C(O)-$ ,  $-NR^{24}-S(O_2)-$ ,  $-NR^{25}-C(O)-O-$ , and wherein  $R^8$  is selected from the group comprising optionally substituted aryl-(lower alkyl), optionally substituted heteroaryl-(lower alkyl), optionally substituted aryl and optionally substituted heteroaryl, preferably optionally substituted phenyl, optionally substituted phenyl-(lower alkyl) and more preferably 1-acetylamino-2-benzo[b]thiophen-3-yl-ethyl; dihalo-benzylsulfanylethyl, monohalo-benzylsulfanylethyl, -4-(monohalo-phenyl)-4-oxo-butyl, 4-(dihalo-phenyl)-4-oxo-butyl; benzo[1,3]dioxol-5-ylmethyl, wherein  $R^{17}$ ,  $R^{24}$  and  $R^{25}$  are each and independently selected from the group comprising  $-H$  and lower alkyl

6. The compound to any of claims 1 to 5, preferably claims 2 to 5, more preferably claims 4 to 5, wherein Q and V are  $\text{---}\overset{|}{N}\text{---}$ , wherein T and U are alkyl, preferably lower alkyl, and wherein the dashed line is absent or a single bond.

7. The compound to any of claims 1 to 5, preferably claims 2 to 5, more preferably claims 4 to 5, wherein  $R^{28}$  is  $-H$  or lower alkyl, wherein the dashed line is a single bond, wherein T is  $-CH_2-$  and wherein U is selected from the group comprising  $-(CH_2)_n-$ ; wherein n is any integer from 1 to 5 and preferably 2,3 or 4.

8. The compound according to any of the claims 1 to 7, preferably claims 2 to 7, more preferably claims 4 to 7, wherein  $R^9$  is  $-H$  and wherein  $R^{10}$  is selected from the group comprising substituted lower alkyl, preferably aryl-(lower-alkyl), heteroaryl-(lower-alkyl), cycloalkyl-(lower-alkyl), heterocyclyl-(lower-alkyl), and more preferably optionally substituted 2-naphthalen-2-yl-ethyl, optionally substituted naphthalen-2-ylmethyl, optionally substituted 2-phenyl-ethyl, optionally substituted 2-phenyl-methyl, optionally substituted quinolin-7-ylmethyl-, and optionally substituted 3-isoquinolin-7-ylmethyl.

9. The compound according to any of claims 1 to 8, preferably claims 2 to 8, more preferably claim 4 to 8 wherein  $A^9$  is  $-NH-C(O)-$  or  $NH-C(S)-$ , whereby the N-atom of each of  $-NH-C(O)-$  and  $NH-C(S)-$  is covalently bound to  $R^{11}$ , and wherein  $R^{11}$  is selected from the group comprising  $-H$ , optionally substituted alkyl, optionally substituted aryl, optionally substituted heteroaryl, optionally substituted heterocyclyl, preferably optionally substituted lower alkyl or  $-H$ , and more preferably optionally substituted *tert*-butyl or optionally substituted isopropyl.

10. The compound according to any of claims 1 to 8, preferably claims 2 to 8, more preferably claims 4 to 8, wherein A<sup>9</sup> is absent and wherein R<sup>11</sup> is selected from the group comprising optionally substituted alkyl, optionally substituted aryl, optionally substituted heteroaryl, optionally substituted heterocyclyl, preferably optionally substituted phenyl, optionally substituted thiazol-2-yl, optionally substituted pyridyl and optionally substituted [1,3,4]oxadiazol-2-yl, optionally substituted 4H-[1,2,4]triazol-3-yl.

11. The compound according to any of the preceding claims, preferably claims 2 to 10, more preferably claims 4 to 10 wherein both R<sup>1</sup> and R<sup>2</sup> are -H.

12. The compound according to any of the preceding claims, preferably claims 2 to 10, more preferably claims 4 to 10, wherein R<sup>1</sup> and R<sup>2</sup> are each a phospho protecting group, whereby preferably R<sup>1</sup> and R<sup>2</sup> are each and independently selected from the group comprising 2,2-dimethyl-propionyloxymethyl, isopropoxycarbonyloxymethyl, and 2-acetylsulfanyl-ethyl.

13. A compound, preferably a compound according to any of the preceding claims, selected from the group comprising

{2-(2-Acetylamino-3-benzo[b]thiophen-3-yl-propionylamino)-3-[2-(1-carbamoyl-2-naphthalen-2-yl-ethylcarbamoyl)-piperidin-1-yl]-3-oxo-propoxymethyl}-phosphonic acid

{2-(2-Acetylamino-3-benzo[b]thiophen-3-yl-propionylamino)-3-[2-(1-carbamoyl-2-naphthalen-2-yl-ethylcarbamoyl)-piperidin-1-yl]-3-oxo-propylsulfanylmethyl}-phosphonic acid

{2-(2-Acetylamino-3-benzo[b]thiophen-3-yl-propionylamino)-3-[2-(1-carbamoyl-2-naphthalen-2-yl-ethylcarbamoyl)-piperidin-1-yl]-3-oxo-propylsulfanylmethyl}-phosphonic acid

[3-[2-(1-Carbamoyl-2-naphthalen-2-yl-ethylcarbamoyl)-piperidin-1-yl]-2-(9H-fluoren-9-ylmethoxycarbonylamino)-3-oxo-propoxymethyl]-phosphonic acid

{3-[2-(1-Carbamoyl-2-naphthalen-2-yl-ethylcarbamoyl)-piperidin-1-yl]-2-[3-(4-chloro-benzylsulfanyl)-propionylamino]-3-oxo-propylsulfanylmethyl}-phosphonic acid

{3-[2-(1-Carbamoyl-2-naphthalen-2-yl-ethylcarbamoyl)-piperidin-1-yl]-2-[3-(3,4-dichloro-benzylsulfanyl)-propionylamino]-3-oxo-propylsulfanylmethyl}-phosphonic acid

{3-[2-(1-Carbamoyl-2-naphthalen-2-yl-ethylcarbamoyl)-piperidin-1-yl]-2-[5-(4-chloro-phenyl)-5-oxo-pentanoylamino]-3-oxo-propylsulfanylmethyl}-phosphonic acid

[3-[2-(1-Carbamoyl-2-naphthalen-2-yl-ethylcarbamoyl)-piperidin-1-yl]-3-oxo-2-(5-phenyl-pentanoylamino)-propylsulfanylmethyl]-phosphonic acid

{2-(3-Benzo[b]thiophen-3-yl-2-{6-[5-(-2-(6-hydroxy-3-oxo-3H-xanthen-9-yl)-benzoic acid)-ureido]-hexanoylamino}-propionylamino)-3-[2-(1-carbamoyl-2-naphthalen-2-yl-ethylcarbamoyl)-piperidin-1-yl]-3-oxo-propylsulfanylmethyl}-phosphonic acid

{3-[2-(1-Carbamoyl-2-naphthalen-2-yl-ethylcarbamoyl)-piperidin-1-yl]-2-[2-(2.5-dioxo-imidazolidin-4-yl)-acetylamino]-3-oxo-propylsulfanylmethyl}-phosphonic acid

[3-[2-(1-Carbamoyl-2-naphthalen-2-yl-ethylcarbamoyl)-piperidin-1-yl]-2-(2-cyclohexyl-acetylamino)-3-oxo-propylsulfanylmethyl]-phosphonic acid

{3-[2-(1-Carbamoyl-2-naphthalen-2-yl-ethylcarbamoyl)-piperidin-1-yl]-3-oxo-2-[(2-oxo-thiazolidine-4-carbonyl)-amino]-propylsulfanylmethyl}-phosphonic acid

(3-[2-(1-Carbamoyl-2-naphthalen-2-yl-ethylcarbamoyl)-piperidin-1-yl]-3-oxo-2-{[2-oxo-3-(2-oxo-thiazolidine-4-carbonyl)-thiazolidine-4-carbonyl]-amino}-propylsulfanylmethyl)-phosphonic acid

[3-[2-(1-Carbamoyl-2-naphthalen-2-yl-ethylcarbamoyl)-piperidin-1-yl]-3-oxo-2-(3-phenoxy-benzoylamino)-propylsulfanylmethyl]-phosphonic acid

{3-[2-(1-Carbamoyl-2-naphthalen-2-yl-ethylcarbamoyl)-piperidin-1-yl]-3-oxo-2-[(1.2.3.4-tetrahydro-naphthalene-2-carbonyl)-amino]-propylsulfanylmethyl}-phosphonic acid

[3-[2-(1-Carbamoyl-2-naphthalen-2-yl-ethylcarbamoyl)-piperidin-1-yl]-3-oxo-2-(3-thiophen-2-yl-propionylamino)-propylsulfanylmethyl]-phosphonic acid

[3-[2-(1-Carbamoyl-2-naphthalen-2-yl-ethylcarbamoyl)-piperidin-1-yl]-2-(9H-fluoren-9-ylmethoxycarbonylamino)-3-oxo-propylsulfanylmethyl]-phosphonic acid

{2-{3-Benzo[b]thiophen-3-yl-2-[(piperidine-4-carbonyl)-amino]-propionylamino}-3-[2-(1-carbamoyl-2-naphthalen-2-yl-ethylcarbamoyl)-piperidin-1-yl]-3-oxo-propylsulfanylmethyl}-phosphonic acid

{2-[3-Benzo[b]thiophen-3-yl-2-(2-piperazin-1-yl-acetylamino)-propionylamino]-3-[2-(1-carbamoyl-2-naphthalen-2-yl-ethylcarbamoyl)-piperidin-1-yl]-3-oxo-propylsulfanylmethyl}-phosphonic acid

{2-Benzoylamino-3-[2-(1-carbamoyl-2-naphthalen-2-yl-ethylcarbamoyl)-piperidin-1-yl]-3-oxo-propylsulfanylmethyl}-phosphonic acid

{3-[2-(1-Carbamoyl-2-naphthalen-2-yl-ethylcarbamoyl)-piperidin-1-yl]-3-oxo-2-phenylacetylamino-propylsulfanylmethyl}-phosphonic acid

[3-[2-(1-Carbamoyl-2-naphthalen-2-yl-ethylcarbamoyl)-piperidin-1-yl]-3-oxo-2-(3-phenyl-propionylamino)-propylsulfanylmethyl]-phosphonic acid



[3-[2-(1-Carbamoyl-2-naphthalen-2-yl-ethylcarbamoyl)-piperidin-1-yl]-3-oxo-2-(4-phenylbutyrylamino)-propylsulfanylmethyl]-phosphonic acid

{2-(2-Biphenyl-4-yl-acetylamino)-3-[2-(1-carbamoyl-2-naphthalen-2-yl-ethylcarbamoyl)-piperidin-1-yl]-3-oxo-propylsulfanylmethyl}-phosphonic acid

{2-(2-Acetylamino-3-benzo[b]thiophen-3-yl-propionylamino)-3-[2-(1-carbamoyl-2-naphthalen-2-yl-ethylcarbamoyl)-piperidin-1-yl]-propylsulfanylmethyl}-phosphonic acid

Ac-Bta-Cys(CH<sub>2</sub>-P(O)(OH)<sub>2</sub>)-NMeazaAla-2Nal-NH<sub>2</sub>

Ac-Bta-Cys(CH<sub>2</sub>-P(O)(OH)<sub>2</sub>)-NMeazaGly-2Nal-NH<sub>2</sub>

{2-[2-(1-Carbamoyl-2-naphthalen-2-yl-ethylcarbamoyl)-piperidin-1-yl]-2-oxo-ethylsulfanylmethyl}-phosphonic acid

{3-[2-(1-Carbamoyl-2-naphthalen-2-yl-ethylcarbamoyl)-piperidin-1-yl]-3-oxo-propylsulfanylmethyl}-phosphonic acid

{2-Acetylamino-3-[2-(1-carbamoyl-2-naphthalen-2-yl-ethylcarbamoyl)-piperidin-1-yl]-3-oxo-propylsulfanylmethyl}-phosphonic acid

{2-Benzyloxycarbonylamino-3-[2-(1-carbamoyl-2-naphthalen-2-yl-ethylcarbamoyl)-piperidin-1-yl]-3-oxo-propylsulfanylmethyl}-phosphonic acid

{3-[2-(1-Carbamoyl-2-naphthalen-2-yl-ethylcarbamoyl)-piperidin-1-yl]-3-oxo-2-phenylmethanesulfonylamino-propylsulfanylmethyl}-phosphonic acid

{3-[2-(1-Carbamoyl-2-naphthalen-2-yl-ethylcarbamoyl)-piperidin-1-yl]-3-oxo-2-[(1-phenylcyclopentanecarbonyl)-amino]-propylsulfanylmethyl}-phosphonic acid

{3-[2-(1-Carbamoyl-2-naphthalen-2-yl-ethylcarbamoyl)-piperidin-1-yl]-2-[2-(2-chloro-phenyl)-acetylamino]-3-oxo-propylsulfanylmethyl}-phosphonic acid

{3-[2-(1-Carbamoyl-2-naphthalen-2-yl-ethylcarbamoyl)-piperidin-1-yl]-2-[2-(4-chloro-phenyl)-acetylamino]-3-oxo-propylsulfanylmethyl}-phosphonic acid

{3-[2-(1-Carbamoyl-2-naphthalen-2-yl-ethylcarbamoyl)-piperidin-1-yl]-2-[2-(4-methoxy-phenyl)-acetylamino]-3-oxo-propylsulfanylmethyl}-phosphonic acid

{3-[2-(1-Carbamoyl-2-naphthalen-2-yl-ethylcarbamoyl)-piperidin-1-yl]-2-[4-(4-chloro-phenyl)-4-oxo-butyrylamino]-3-oxo-propylsulfanylmethyl}-phosphonic acid

{3-[2-(1-Carbamoyl-2-naphthalen-2-yl-ethylcarbamoyl)-piperidin-1-yl]-2-[4-(4-methoxy-phenyl)-butyrylamino]-3-oxo-propylsulfanylmethyl}-phosphonic acid

{3-[2-(1-Carbamoyl-2-naphthalen-2-yl-ethylcarbamoyl)-piperidin-1-yl]-3-oxo-2-[(5-oxo-pyrrolidine-2-carbonyl)-amino]-propylsulfanylmethyl}-phosphonic acid

{2-[(Benzofuran-2-carbonyl)-amino]-3-[2-(1-carbamoyl-2-naphthalen-2-yl-ethylcarbamoyl)-piperidin-1-yl]-3-oxo-propylsulfanylmethyl}-phosphonic acid

[3-[2-(1-Carbamoyl-2-naphthalen-2-yl-ethylcarbamoyl)-piperidin-1-yl]-3-oxo-2-(2-piperazin-1-yl-acetylamino)-propylsulfanylmethyl]-phosphonic acid

{2-[(3-Acetyl-2-oxo-thiazolidine-4-carbonyl)-amino]-3-[2-(1-carbamoyl-2-naphthalen-2-yl-ethylcarbamoyl)-piperidin-1-yl]-3-oxo-propylsulfanylmethyl}-phosphonic acid

{3-[2-(1-Carbamoyl-2-naphthalen-2-yl-ethylcarbamoyl)-piperidin-1-yl]-2-isobutoxycarbonylamino-3-oxo-propylsulfanylmethyl}-phosphonic acid

{2-Butoxycarbonylamino-3-[2-(1-carbamoyl-2-naphthalen-2-yl-ethylcarbamoyl)-piperidin-1-yl]-3-oxo-propylsulfanylmethyl}-phosphonic acid

{3-[2-(1-Carbamoyl-2-naphthalen-2-yl-ethylcarbamoyl)-piperidin-1-yl]-2-methoxycarbonylamino-3-oxo-propylsulfanylmethyl}-phosphonic acid

{3-[2-(1-Carbamoyl-2-naphthalen-2-yl-ethylcarbamoyl)-piperidin-1-yl]-3-oxo-2-phenoxy carbonylamino-propylsulfanylmethyl}-phosphonic acid

{3-[2-(1-Carbamoyl-2-naphthalen-2-yl-ethylcarbamoyl)-piperidin-1-yl]-3-oxo-2-phenethyloxy carbonylamino-propylsulfanylmethyl}-phosphonic acid

{2-Benzenesulfonylamino-3-[2-(1-carbamoyl-2-naphthalen-2-yl-ethylcarbamoyl)-piperidin-1-yl]-3-oxo-propylsulfanylmethyl}-phosphonic acid

[3-[2-(1-Carbamoyl-2-naphthalen-2-yl-ethylcarbamoyl)-piperidin-1-yl]-3-oxo-2-(2-phenylethanesulfonylamino)-propylsulfanylmethyl]-phosphonic acid

[3-[2-(1-Carbamoyl-2-naphthalen-2-yl-ethylcarbamoyl)-piperidin-1-yl]-3-oxo-2-(3-phenylpropane-1-sulfonylamino)-propylsulfanylmethyl]-phosphonic acid

{3-[2-(1-Carbamoyl-2-naphthalen-2-yl-ethylcarbamoyl)-piperidin-1-yl]-2-methanesulfonylamino-3-oxo-propylsulfanylmethyl}-phosphonic acid

[3-[2-(1-Carbamoyl-2-naphthalen-2-yl-ethylcarbamoyl)-piperidin-1-yl]-3-oxo-2-(2,4,6-trimethyl-benzenesulfonylamino)-propylsulfanylmethyl]-phosphonic acid

[3-[2-(1-Carbamoyl-2-naphthalen-2-yl-ethylcarbamoyl)-piperidin-1-yl]-3-oxo-2-(thiophene-2-sulfonylamino)-propylsulfanylmethyl]-phosphonic acid

[3-[2-(1-Carbamoyl-2-naphthalen-2-yl-ethylcarbamoyl)-piperidin-1-yl]-3-oxo-2-(3-piperidin-1-yl-propionylamino)-propylsulfanylmethyl]-phosphonic acid

{2-[2-(1-Carbamoyl-2-naphthalen-2-yl-ethylcarbamoyl)-piperidin-1-yl]-ethylsulfanylmethyl}-phosphonic acid

{2-(2-Benzo[1.3]dioxol-5-yl-acetylamino)-3-[2-(1-carbamoyl-2-naphthalen-2-yl-ethylcarbamoyl)-piperidin-1-yl]-3-oxo-propylsulfanylmethyl}-phosphonic acid

{3-[2-(1-Carbamoyl-2-naphthalen-2-yl-ethylcarbamoyl)-piperidin-1-yl]-2-[2-(3,5-dimethoxyphenyl)-acetylamino]-3-oxo-propylsulfanylmethyl}-phosphonic acid

{3-[2-(1-Carbamoyl-2-naphthalen-2-yl-ethylcarbamoyl)-piperidin-1-yl]-2-[2-(2-methoxy-phenyl)-acetylamino]-3-oxo-propylsulfanylmethyl}-phosphonic acid

{2-[2-(2-Naphthalen-2-yl-ethylcarbamoyl)-piperidin-1-yl]-2-oxo-ethylsulfanylmethyl}-phosphonic acid

[2-Oxo-2-(2-phenylcarbamoyl-piperidin-1-yl)-ethylsulfanylmethyl]-phosphonic acid

{3-[2-(1-Carbamoyl-2-naphthalen-2-yl-ethylcarbamoyl)-piperidin-1-yl]-2-[2-(3-methoxy-phenyl)-acetylamino]-3-oxo-propylsulfanylmethyl}-phosphonic acid

{3-[2-(1-Carbamoyl-2-naphthalen-2-yl-ethylcarbamoyl)-piperidin-1-yl]-3-oxo-2-[2-(4-piperazin-1-yl-phenyl)-acetylamino]-propylsulfanylmethyl}-phosphonic acid

{2-[2-(1-tert-Butylcarbamoyl-2-naphthalen-2-yl-ethylcarbamoyl)-piperidin-1-yl]-2-oxo-ethylsulfanylmethyl}-phosphonic acid

{2-[2-(1-Methylcarbamoyl-2-naphthalen-2-yl-ethylcarbamoyl)-piperidin-1-yl]-2-oxo-ethylsulfanylmethyl}-phosphonic acid

{2-[2-(1-Carbamoyl-2-naphthalen-2-yl-ethylcarbamoyl)-piperidin-1-yl]-1-methyl-2-oxo-ethylsulfanylmethyl}-phosphonic acid

[2-(2-Benzylcarbamoyl-piperidin-1-yl)-2-oxo-ethylsulfanylmethyl]-phosphonic acid

[2-Oxo-2-(2-phenethylcarbamoyl-piperidin-1-yl)-ethylsulfanylmethyl]-phosphonic acid

{2-Oxo-2-[2-(3-phenyl-propylcarbamoyl)-piperidin-1-yl]-ethylsulfanylmethyl}-phosphonic acid

{2-[2-(1-Carbamoyl-2-naphthalen-2-yl-ethylcarbamoyl)-piperidin-1-yl]-1-methylcarbamoylmethyl-2-oxo-ethylsulfanylmethyl}-phosphonic acid

{2-[2-(1-Carbamoyl-2-naphthalen-2-yl-ethylcarbamoyl)-piperidin-1-yl]-1-[(4-methoxy-phenylcarbamoyl)-methyl]-2-oxo-ethylsulfanylmethyl}-phosphonic acid

{2-[2-(1-tert-Butylcarbamoyl-2-naphthalen-2-yl-ethylcarbamoyl)-piperidin-1-yl]-ethylsulfanylmethyl}-phosphonic acid

2,2-Dimethyl-propionic acid {2-[2-(1-tert-butylcarbamoyl-2-naphthalen-2-yl-ethylcarbamoyl)-piperidin-1-yl]-2-oxo-ethylsulfanylmethyl}-(2,2-dimethyl-propionyloxymethoxy)-phosphinoyloxymethyl ester

{2-[2-(2-Naphthalen-2-yl-1-phenyl-ethylcarbamoyl)-piperidin-1-yl]-2-oxo-ethylsulfanylmethyl}-phosphonic acid

(2-{2-[1-(4-Methyl-thiazol-2-yl)-2-naphthalen-2-yl-ethylcarbamoyl]-piperidin-1-yl}-2-oxo-ethylsulfanylmethyl)-phosphonic acid

{2-[2-(2-Naphthalen-2-yl-1-[1,3,4]oxadiazol-2-yl-ethylcarbamoyl)-piperidin-1-yl]-2-oxo-ethylsulfanylmethyl}-phosphonic acid



(2-{2-[2-Naphthalen-2-yl-1-(4H-[1,2,4]triazol-3-yl)-ethylcarbamoyl]-piperidin-1-yl}-2-oxo-ethylsulfanylmethyl)-phosphonic acid

{2-[2-(2-Naphthalen-2-yl-1-pyridin-2-yl-ethylcarbamoyl)-piperidin-1-yl]-2-oxo-ethylsulfanylmethyl}-phosphonic acid

and salts, hydrates and solvates thereof as well as pro drugs thereof.

14. A pharmaceutical composition comprising a compound according to any of claims 1 to 13 and a pharmaceutically acceptable carrier, diluent or excipient.

15. The pharmaceutical composition according to claim 14 comprising a further pharmaceutically active compound.

16. The pharmaceutical composition according to claim 14 or 15, wherein the compound is present as a pharmaceutically acceptable salt or a pharmaceutically active solvate.

17. The pharmaceutically active composition according to any of claims 14 to 16, wherein the pharmaceutically active compound is either alone or in combination with any of the ingredients of the composition present in a multitude of individualized dosages and/or administration forms.

18. Use of a compound according to any of the preceding claims for the manufacture of a medicament.

19. Use of a compound for the manufacture of a medicament for the treatment of a disease, whereby the disease involves an abnormal cell proliferation, an undesired cell proliferation, an abnormal mitosis and/or an undesired mitosis,

whereby the compound is a compound according to any of the preceding claims.

20. The use according to claim 19, wherein the compound is acting on an enzymatic activity involved in the regulation of cell division and/or cell cycle or part thereof, preferably the part of the cell cycle is mitosis.

21. The use according to claim 19 or 20, wherein the disease is selected from the group comprising neurodegenerative diseases, stroke, inflammatory diseases, immune based disorders, infectious diseases, heart diseases, cardiovascular diseases and cell proliferative diseases.

22. The use according to claim 21, wherein the neurodegenerative disease is selected from the group comprising Alzheimer's disease, Huntington's disease, Parkinson's disease, peripheral neuropathy, progressive supranuclear palsy, corticobasal degeneration, frontotemporal dementia, synucleinopathies, multiple system atrophy, amyotrophic lateral atrophy, prion diseases and motor neuron diseases.

23. The use according to claim 21, wherein the infectious disease is selected from the group comprising fungal, viral, bacterial and parasite infection.

24. The use according to claim 23, wherein the fungal infection is selected from the group comprising gynaecological and dermatological infection.

25. The use according to claim 23, wherein the fungal infection is caused by or involves *Histoplasma*, *Coccidioides*, *Cryptococcus*, *Blastomyces*, *Paracoccidioides*, *Aspergillus*, *Sporothrix*, *Rhizopus*, *Absidia*, *Mucor*, *Hormodendrum*, *Phialophora* *Microsporum*, *Epidermophyton*, *Rhinosporidium* or by a yeast, preferably *Candida* or *Cryptococcus*.

26. The use according to claim 21 or 23, wherein the infectious disease is selected from or the fungal infection causes a disorder selected from the group comprising ringworm, candidiasis, coccidioidomycosis, blastomycosis, aspergillosis, cryptococcosis, histioplasmosis, paracoccidiomycosis, zygomycosis, sporotrichiosis, mycotic keratitis, nail hair and skin disease, lobomycosis, chromoblastomycosis, mycetoma.

27. The use according to claim 23, wherein the bacterial infection is selected from the group comprising infections caused by Gram-positive and by Gram-negative bacteria.

28. The use according to claim 27, wherein the bacterial infection is caused by or involves *Staphylococcus*, *Clostridium*, *Streptococcus*, *Listeria*, *Salmonella*, *Bacillus*, *Escherichia*,

*Mycobacteria, Serratia, Enterobacter, Enterococcus, Nocardia, Hemophilus, Neisseria, Proteus, Yersinia, Helicobacter or Legionella.*

29. The use according to claim 21 or 23, wherein the infectious disease is selected from or the bacterial infection causes a disorder selected from the group comprising pneumonia, diarrhea, dysentery, anthrax, rheumatic fever, toxic shock syndrome, mastoiditis, meningitis, gonorrhea, typhoid fever, brucellis, Lyme disease, gastroenteritis, tuberculosis, cholera, tetanus and bubonic plague.

30. The use according to claim 23, wherein the viral infection is selected from the group comprising infections caused by or involving retrovirus, HIV, Papilloma virus, Polio virus, Epstein-Barr, Herpes virus, Hepatitis virus, Papova virus, Influenza virus, Rabies, JC, encephalitis causing virus or hemorrhagic fever causing virus.

31. The use according to claim 23, wherein the parasite infection is selected from the group comprising infections caused by or involving *Trypanosoma, Leishmania, Trichinella, Echinococcus, Nematodes, Classes Cestoda Trematoda, Monogenea, Toxoplasma, Giardia, Balantidium, Paramecium, Plasmodium, or Entamoeba.*

32. The use according to claim 21, wherein the cell proliferative disorder is selected from the group comprising neoplastic and non-neoplastic disorders.

33. The use according to claim 32, wherein the neoplastic cell proliferative disorder is selected from the group comprising solid tumor, lymphoma and leukemia.

34. The use according to claim 33, wherein the solid tumor is selected from the group comprising carcinoma, sarcoma, osteoma, fibrosarcoma, and chondrosarcoma.

35. The use according to claim 32, wherein the neoplastic cell proliferative disorder is selected from the group comprising breast cancer, prostate cancer, colon cancer, brain cancer, lung cancer, pancreatic cancer, gastric cancer, bladder cancer and kidney cancer.

36. The use according to claim 32, wherein the non-neoplastic cell proliferative disorder is a fibrotic disorder, preferably the fibrotic disorder is fibrosis.
37. The use according to claim 32, wherein the non-neoplastic cell proliferative disorder is selected from the group comprising prostatic hypertrophy, endometriosis, psoriasis, tissue repair and wound healing.
38. The use according to claim 21, wherein the immune based/inflammatory disease is an autoimmune disease or disorder.
39. The use according to claim 21, wherein the immune based/inflammatory disease is selected from the group comprising rheumatoid arthritis, glomerulonephritis, systemic lupus erythematosus associated glomerulonephritis, irritable bowel syndrome, bronchial asthma, multiple sclerosis, pemphigus, pemphigoid, scleroderma, myasthenia gravis, autoimmune haemolytic and thrombocytopenic states, Goodpasture's syndrome, pulmonary hemorrhage, vasculitis, Crohn's disease and dermatomyositis.
40. The use according to claim 21, wherein the immune based and/or inflammatory disease is an inflammatory condition.
41. The use according to claim 21, wherein the immune based and/or inflammatory disease is selected from the group comprising inflammation associated with burns, lung injury, myocardial infarction, coronary thrombosis, vascular occlusion, post-surgical vascular reocclusion, arteriosclerosis, traumatic central nervous system injury, ischemic heart disease and ischemia-reperfusion injury, acute respiratory distress syndrome, systemic inflammatory response syndrome, multiple organ dysfunction syndrome, tissue graft rejection and hyperacute rejection of transplanted organs.
42. The use according to any of claims 19 to 41, wherein the medicament is for administration via an administration route which is selected from the group comprising oral, subcutaneous, intravenous, intranasal, transdermal, intraperitoneal, intramuscular, intrapulmonar, vaginal, rectal, and intraocular administration.

43. The use according to any of claims 19 to 42, wherein the medicament is for the administration to a mammal, preferably to a human being.

44. The use according to any of claims 18 to 43, wherein the medicament is or comprises a pharmaceutical composition according to any of claims 14 to 17.